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From: Jon Rosenfield, Ph.D.
Sent: Wed 1/15/2014 9:36:58 PM
Subject: Data and calculators for estimating juvenile salmon survival rates under different scenarios

San Joaquin Juvenile Survival Model - Draft JAR 01152014.xlsx
feb 2011 DOI SJR salmon survival.pdf
Comparitive review of pacific salmon survival rates.pdf
NMFS Survival Objectives Tech Memo_Oct19th_FINAL.docx
Chinook survival -- Healy 1991.pdf
DRERIP_Salmon_final_2010-Sept.pdf

Hi Diane
Attached are the data/calculators we used in generating estimates for freshwater survival through the whole San Joaquin + delta complex from existing estimates and under future scenarios.

The data and parameters sheets are fairly straightforward and are documented in the "Notes" sheet.

The "Stan Survival by River Mile" sheet is a little messier. It is intended to allow for

1) calculation in areas where we currently have no estimate of survival (i.e. between Caswell and the start of the Delta at Vernalis/Durham Ferry), and
2) estimate of total survival in different stretches based on a "by river mile" proportional survival approach.

The "Model-Allocation of FW Survival" Sheet is also pretty dense. It calculates:

1) current estimates of Freshwater Survival based on estimates from the agencies (NMFS 2012 and DOI 2011) and from calculations in this spreadsheet.
2) Then it allows one to toggle "Necessary Freshwater Survival" in order to attain various productivity goals ("doubling in 3 generations", "resilience from low populations", and Typical Chinook Survival Rates in FW"),
3) Shows the implications of a given total freshwater survival target under different assumptions about how to allocate responsibility between Delta and Tribs
4) It then applies survival rates and different escapements (stock) to give an image of the number of juveniles at Caswell we'd expect to see (this is more relevant to the tributaries conversation, where this all started).

One assumption that is carried through many other calculations is the estimate of "egg" production (which is then used to calculate egg-smolt survival rates, for instance). THis is estimated as 1/2 the relevant escapement the year before (reflects a 1:1 sex ratio) and an average fecundity of 5000 eggs per female (this can also be expressed as 2500 eggs per returning fish =

[5000 / 2]). There are some data for sex ratio and fecundity from the Tuolumne that could be used to sharpen the estimates of current survival. But they are unlikely to change the overall outcome of this exercise much.

I'm happy to discuss this version of the spreadsheet with you, your staff, or anyone else on this e-mail. I'd love to here if anyone finds calculation errors (especially, since some may have crept in during my effort to make this interpretable to others).

let me know when/if you want me to walk you or others through the data/calculations.

Best wishes,
JR

PS Also attached are the DOI testimony and NMFS tech memo used for their estimates and the three estimates of "typical Chinook salmon FW survival".

- Bradford
- Quinn (reproduced in the DRERIP conceptual model for Central Valley salmonids See Table 1, p 10 and
- Healy (Page 330 from Groot and Margolis (Healy 1991))

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Help me protect San Francisco Bay and its watershed: http://www.crowdrise.com/Jonrosenfield